respectively). The major allele genotypes for both SNPs also interacted with depressive symptoms to influence the risk of indoor tanning addiction: OR 7.03, 95% CI, 3.26–15.19, OR 4.35, 95% CI, 2.06–9.20, respectively. Conclusions: This study is among the first to demonstrate SNPs in the DRD2 dopamine receptor gene are associated with indoor tanning addiction. Our findings demonstrate young women with risk-conferring genotypes and exhibiting depressive symptoms are at especially high risk. These data can inform personalized interventions tailored to neurobiological and behavioral differences to prevent melanoma and nonmelanoma skin cancer.

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Sugar-Sweetened Cigarettes: Added Sugars in American Cigarette Brands

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Sugars are commonly added to American-blended cigarettes, and the presence of sugars in cigarettes increases the appeal, toxicity, and addictive potential of smoking. The purpose of this study was to identify the types and relative quantities of added sugars in the tobacco of popular American cigarette brands. Methods: We reviewed the company websites of Philip Morris USA (PMUSA) and RJ Reynolds Tobacco Company (RJR) for brand-specific ingredient lists for all PMUSA ($n = 179$) and RJR ($n = 162$) cigarette brand styles (combined 79% of US cigarette sales in 2016) and composite lists of all cigarette tobacco ingredients for both companies. From these lists, we identified known forms of saccharides (mono-, di-, and oligosaccharides). Results: All PMUSA and RJR cigarette brands contained at least one type of added sugar, except one RJR brand (6 brand styles), which contained no additives. By weight, sugars were the number one ingredient (excluding tobacco and water) in all PMUSA brands (e.g., Marlboro, Parliament, Virginia Slims). Examples of sugars added to PMUSA brands included high fructose corn syrup, sucrose, maltol, and ethyl maltol. Among RJR brands, sugar was the number two ingredient by weight (excluding tobacco and water) in most brands (e.g., Camel, Newport, Pall Mall). In some RJR brands, quantities of added sugar relative to other ingredients were more variable, ranging from the first to fourth most used ingredient by weight (e.g., Carlton, Doral, Kent, More). Types of sugars added to RJR brands included high fructose corn syrup, brown sugar, honey, glucose, and a variety of fruit juice concentrates (e.g., apple, fig, pineapple). Interestingly, many menthol cigarette brands (e.g., Newport, Marlboro Menthol, Camel Menthol) contained greater quantities of added sugar than menthol. Conclusions: A variety of sugars, including sugars routinely added to processed foods and beverages, are added to American cigarettes. Further, by weight, added sugars were the number one or number two ingredient in most cigarette brands. Given that added sugars increase the appeal, toxicity, and addictive potential of smoking, regulatory actions should be considered (e.g., a product standard for sugar) for the protection of public health.

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Commercially Available Lifestyle Modification Program Decreases Inflammatory Biomarkers in BRCA1/2+ Breast Cancer Survivors

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The goal of this randomized controlled trial was to examine the effect of a 12-month commercially available web-based lifestyle program (Precision Nutrition (PN), Inc©) on biomarkers of inflammation, compared to usual care among a national cohort of 35 BRCA1/2+ breast cancer survivors with surgically-induced early menopause. The PN program included access to a PN coach and completion of three daily activities: 1) exercises; 2) completing a nutritional/lifestyle habit, and 3) reading health related material. The exercise component was completed at home or at a local gym, and required 160 min/wk of exercise (3 days/week of progressive resistance exercise, 2 days/week of interval aerobic exercise, and 1 day/week of active recovery aerobic exercise). Blood draws, body composition measurements, and fitness capacity were measured at baseline and follow up. The cohort was middle-aged (46.1 ± 4.0 years of age), white, and well-educated. The intervention group ($n = 19$) was 74.8% adherent to the program (average of all components: fitness, behavioral, education). At baseline, higher insulin levels were associated with higher TNFα levels ($r = 0.38$, $P = 0.04$). Higher BMI as well as higher % body fat levels were significantly associated with higher levels of: insulin, IL6, and TNFα. There was a trend for association between lower fitness levels and higher insulin levels ($r = -0.33$, $P = 0.07$), and a significant association between lower fitness levels and higher IL6 and TNFα level. Following 12 months of the PN program we did not observe any significant between group differences for change in biomarker levels. Within the control group, IL8 levels decreased ($P = 0.04$). Within the intervention group, we observed decreased levels of insulin ($P = 0.06$), and TNFα ($P = 0.02$). In conclusion, we observed elevation of pro-inflammatory biomarkers in BRCA1/2+ breast cancer survivors with excess body fat and low fitness at baseline. Following the intervention, levels of pro-inflammatory cytokine TNFα were significantly reduced. BRCA1/2+ breast cancer survivors with prophylactic oophorectomy are still at enhanced risk for non-reproductive cancers. In this high risk population, identifying interventions such as PN to decrease chronic inflammation and subsequent DNA damage is critically important.

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Clinical and Psychological Predictors of Switching from Active Surveillance to Active Treatment among Men with Low-Risk Prostate Cancer: the PREPARE Prospective Cohort Study

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Numerous observational studies have assessed the clinical predictors of switching from active surveillance (AS) to active treatment (AT), but few have assessed psychological and decisional predictors.

In a prospective, comparative effectiveness cohort study of men newly diagnosed with low-risk PCa, we assessed whether psychological and decisional factors predicted switching to AT after adjusting for clinical factors. We conducted pre-treatment telephone interviews ($N = 1,139$; 69.3% participation) with low-risk PCa patients (PSA < 10, Gleason < 7) and a follow-up assessment 6–10 months post-diagnosis ($N = 1057$; 93%). Clinical variables were obtained from the medical record. The current analysis included men who were on AS for up to 24 months ($N = 515$), compared to men on AS for >12 months who switched to AT between 12–24 months ($N = 86$). In Cox proportional hazard models, we included 2 time-dependent covariates measured between diagnosis and 24-months post-diagnosis: PSA (<4, 4–9.99, 10+) and Gleason score (<7, 7+, no surveillance biopsy). Baseline covariates included age (X = 62.3 (SD = 7.0), first degree relative with PCa (25%), number of positive cores (<2 = 75%), urologist initial treatment recommendation (14% AT). Covariates measured at 6 months included prostate-specific anxiety, decisional satisfaction, decisional uncertainty, and preference for shared vs. independent decisions. The fully adjusted model indicated that switching to an active treatment was more likely among those with a PSA > 10 (HR 5.6, 2.4–13.1), Gleason 7+ (HR 20.2, 12.2–33.4), and the urologist's initial recommendation of AT (HR 2.1, 1.04–4.2). The psychological variables, including preference for making independent treatment decisions (HR 2.7, 1.07–6.9) and concern that disease progression will not be detected (HR 1.5, 0.95–2.4), were independently associated with undergoing AT. After adjusting for clinical evidence of disease progression over the first two years post-diagnosis, men's concerns that disease progression will not be detected and preference for making their own treatment decision each independently predicted undergoing AT. These findings suggest the need to provide information and assistance to men who may be uncertain about remaining on AS, particularly when AS remains clinically indicated.

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Cumulative Incidence of Non-breast Cancer Mortality and Breast Cancer Risk by Comorbidity and Age among Older Women Undergoing Screening Mammography: The Medicare-linked Breast Cancer Surveillance Consortium Cohort Study

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Due to an increasing comorbidity burden with aging, the margin of benefit from screening mammography in women ages ≥65 is highly variable. This study examined 10-year cumulative risk of non-breast cancer mortality and breast cancer by comorbidity and age in a screening population. Methods: We used prospective cohort data from the Breast Cancer Surveillance Consortium (BCSC), which included 198,362 women ages ≥65 years who have undergone at least one screening mammogram. We calculated cumulative incidence of non-breast cancer mortality and risk of breast cancer 10 years following the screening mammogram for women ages 65–74, 75–84 and ≥85 years stratified by the Charlson Comorbidity Index (CCI scores 0, 1 and ≥2). Results: During a median follow-up time of 8.1 years (interquartile range, 4.6 to 10 years), 34,768 died from non-breast cancer causes and 6,327 women were diagnosed with invasive breast cancer of whom 359 died from breast cancer and 942 from non-breast cancer causes. The 10-year cumulative risk of invasive breast cancer following a screening mammogram did not significantly decrease with elevating CCI score and age for women ages 65–74 [CCI 0 = 4.0% (95% CI, 3.9%–4.1%) vs. CCI ≥2 = 3.8% (95% CI, 3.3%–4.3%)], ages 75–84 [CCI 0 = 3.7% (95% CI, 3.5%–3.9%) vs. CCI ≥ 2 = 3.4% (95% CI, 2.8%–4.0%)], and ages ≥85 [CCI 0 = 2.7%, (95% CI, 2.3%–3.2%) vs. CCI ≥ 2 = 2.5% (95% CI, 1.4%–3.6%)]. Cumulative risk of non-breast cancer mortality significantly increased with increasing CCI and age for women ages 65–74 [CCI 0 = 11% (95% CI, 10%–11%] vs. CCI ≥ 2 = 45% (95% CI, [43%–46%)], ages 75–84 [CCI 0 = 29% (95% CI, 29%–30%) vs. CCI ≥2 = 62% (95% CI, 60%–63%)], and ages ≥85 [CCI 0 = 59%, (95% CI, 57%–60%) vs. CCI ≥2 = 84% (95% CI, 81%–86%)]. Conclusion: Risk of non-breast cancer mortality was high and significantly increased with rising comorbidity burden and age whereas breast cancer risk was low and non-significantly decreased with both. These results suggest that women with a CCI score of ≥2 or ages ≥75 years may experience minimal benefit from continuing routine screening mammography. Future research is needed to delineate the specific benefits and harms of screening mammography in subsets of older women defined by age and comorbidity burden.

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